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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,206

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Laurent Bournay

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23599

7590

09/27/2010

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ARLINGTON, VA 22201

EXAMINER

NGUYEN, TAM M

ART UNIT

PAPER NUMBER

1797

NOTIFICATION DATE

DELIVERY MODE

09/27/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@mwzb.com

Office Action Summary	Application No. 10/579,206	Applicant(s) BOURNAY ET AL.	
	Examiner TAM M. NGUYEN	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 10 and 11 recites the limitation "the isomerization unit (17)" in line 6 of claim 10 and 11. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zarchy et al. (US 5,245,102) in view of Ragil et al. (US 6,156,950).

Zarchy discloses an isomerization process wherein a feedstock comprising normal paraffins, benzene, and iso-paraffins wherein at least a portion of the feedstock after separation of at least a portion of branched paraffins is introduced into an isomerization zone to increase branching of hydrocarbons of the feedstock. An effluent from the isomerization zone is charged to a stabilizer to separate C₄ and lighter hydrocarbons from the effluent which is then passed into a deisohexanizer to produce an overhead stream comprising normal pentane, isopentane, and di-branched C₆ paraffins and a bottom stream containing C₇ branched paraffins, cyclohexane, and naphthalenes. The overhead stream is then passed into an adsorption zone to separate normal pentane from isopentane and di-branched C₆ paraffins. The normal pentane is recycled back to the isomerization zone. Zarchy further teaches that the feedstock is introduced at least in part at the stabilizer. See abstract; Figure 1, col. 3, line 60 through col. 5, line 26; col. 10, line 54 through col. 12, line 28. Table 1,

Zarchy does not disclose a step of using a membrane unit as claimed.

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Ragil disclose a process for separation normal paraffins from branched paraffins by utilizing a membrane unit wherein the permeate is primarily n-pentane and the process is operated at a pressure from 0.01-7 MPa. A flushing gas comprising isopentane and normal hydrocarbon produced within the process is used reduced pressure on the permeating side. Ragil further teaches that a membrane unit such disclosed by WO 96/01687 and EP-778075 can be employed. The WO reference teaches a membrane comprising a MFI zeolite and ions (e.g., Na) and it is a nanocrystallized membrane. The EP reference teaches that the membrane can be base on a LTA-type zeolite. See col.4, line 50 through col. 5, line 25; col. 9, line 66 through col. 10, line 50.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Zarchy by utilizing a membrane unit as suggested by Ragil because the membrane unit is simple and operated continuously compared to an adsorption unit.

Ragil does not disclose that a scavenging gas comprising the flow G and hydrogen or incondensable gas.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Ragil by using the flow G and hydrogen or incondensable gas as claimed because Ragil teaches that a stream comprising isopentane produced from the process can be used as a flushing gas. It is noted that 1) the side stream (flow G) from the deisohexanier column of Zarchy comprises isopentane and 2) the side stream and the normal hydrocarbons from the adsorption/membrane are recycled to the isomerization zone.

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It is within the level of one of skill in the art would utilize the side stream as flushing gas as claimed.

Ragil does not specifically teach that the membrane separation is operated at a pressure on the permeate-side is less than 0.3 MPa.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Ragil by operating the pressure on the permeate-side of less than 0.3 MPa because Ragil teaches that the process is operated at a pressure of from 0.01-7 MPa and the membrane is an average differences of 0.05 to 1 MPa to result in separation (the permeate-side must have a lower pressure than the feeding side). It is within the level of one of skill in the art to maintain the pressure of the permeate-side less than 0.3 MPa.

Ragil does not specifically teach that the membrane comprises polymer.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Ragil by utilizing a membrane comprising polymer because it is within the level one of skill in the art to use any effective membrane including a membrane comprising polymer.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over references as applied to claim 1 above alone or alternatively and further in view of Rice (US 6,395,950 B1).

Zarchy does not specifically teach that the deisohexaner is a partition column.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process the process of Zarchy by utilizing a partition

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column because it is known that a partition column is effective to produce at least three different output streams.

Alternatively, Rice teaches a partition column for separation a mixture of paraffins. See abstract; Figure 1.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Zarchy by utilizing a partition column as suggested by Rice because such column is effective to separate the mixture into three different streams and it is an advantage to use a partition column in term of capital investment.

Response to Arguments

The argument that Ragil does not teach the use of a scavenging gas be produced by the process itself is not persuasive. Ragil teaches the flushing gas produced within the process. It is noted that 1) the side stream (flow G) from the deisohexanier column of Zarchy comprises isopentane and normal hydrocarbons and 2) the side stream and the normal hydrocarbons from the adsorption/membrane are recycled to the isomerization zone. It is within the level of one of skill in the art would utilize the side stream as flushing gas as claimed.

The argument isopentane is not separated from mono-branched paraffins in the process of Ragil and the applicants do not required a deisopentanizer in order to separate normal pentane from isopentane is not persuasive. Ragil teaches that that normal hydrocarbon (e.g., pentane) is separated from mono-ranched hydrocarbons (e.g., isopentane). See Figure 1; col.5, line 26 through col. 6, line 6; col. 7, line 43-61. The process of Ragil/Zarchy includes “a selective membrane unit relative to the normal pentane/isopentane separation” as claimed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAM M. NGUYEN whose telephone number is (571)272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tam M. Nguyen
Primary Examiner
Art Unit 1797

TN
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Primary Examiner, Art Unit 1797